Operational Risk Management (ORM)

HQ AFMC ORM Steering Committee Briefing and WR-ALC ORM Perspective, 18 Nov 98

Lt. Col. George Harper and Mr. Jack Copeland

OVERVIEW

- AFMC Training Concept
- Basic Principles
- A Real World Assessment
- How to Recognize Good Assessments
- Maximizing the Application
- Overseeing The Command

AFMC Training Concept

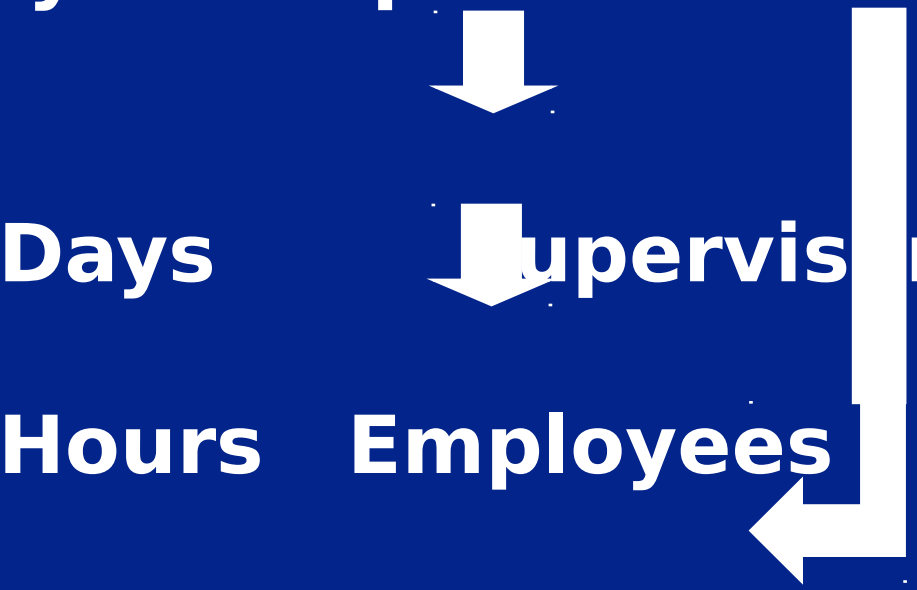
AFI 91-213 AFMC Supplement 1

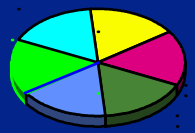
Level 1 5 Days Experts & Instructors

Level 2 1-2 Days Supervisors

Level 3 1-2 Hours Employees

Level 4 1-2 Hours Executives





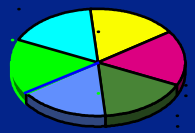
AFMC Training Concept

Level 1, Experts & Instructors, 5 Days

- ✪ Textbook is AFPAM 91-215

- Individual Exercises - 21
- Instructor Guided Assessments - 3
- Student Assessments - 4

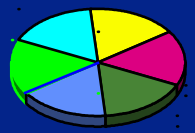
- Graduates can Instruct / Facilitate /



AFMC Training Concept

Level 2, Supervisors, 2 Days

- Textbook is AFPAM 91-215
- Individual Exercises - 16
- Instructor Guided Assessments - 3
- Student Assessments - 1 (Time Permitting)
- Graduates can Instruct Level 3,



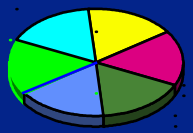
AFMC Training Concept

Level 3, Employees, 2 Hours

- Instructor Guided Assessments - 1
- Employees can Participate in Assessments

Level 4, Executives, Tailored

- Senior Executive Awareness of Benefits



BASIC PRINCIPLES

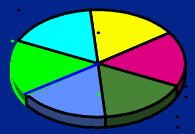
1 - Accept no unnecessary risks.

2 - Make risk decisions at the appropriate level.

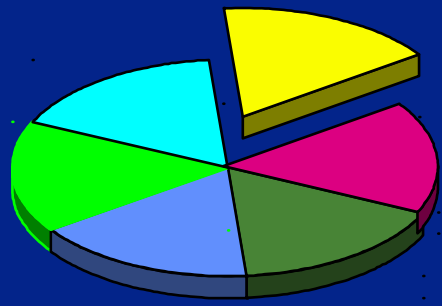
3 - Accept risks when benefits outweigh costs.

4 - Integrate ORM into doctrine and planning at all levels.

THE ORM 6-STEP PROCESS

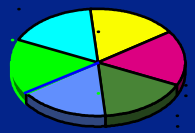


Step 1 - Identify the Hazard



Process: Use traditional procedures with emphasis on hazard analysis. Adds rigor and early detection.

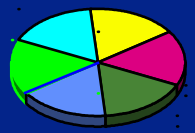
Output: Significant increase in the number of hazards identified.



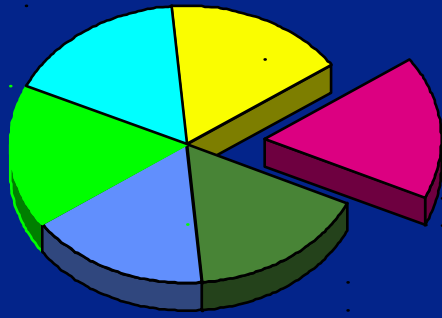
Primary Hazard ID Tools

- Operations Analysis/Flow Diagram
- Preliminary Hazard Analysis
- What If
- Scenario
- Logic Diagrams
- Change Analysis
- Cause and Effect

AFPAM 91-215 -- the “Tool Box”



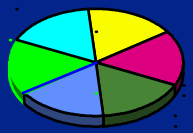
Step 2 - Assess the Risk



Process: All hazards evaluated for total impact on mission or activity. Root causes determined and risk levels assigned (EH, H, M, L; or 1-20)

Output: Prioritization of major risk issues.

THE RISK ASSESSMENT MATRIX



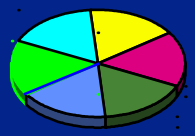
SEVERITY			Mishap Probability				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
	Catastrophic	I	Extremely High				
	Critical	II					
	Moderate	III		Medium			
	Negligible	IV				Low	
			Risk Levels				

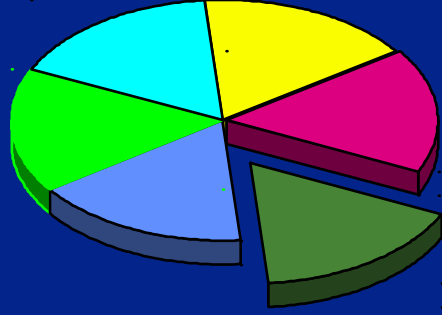
THE "ENHANCED" RISK ASSESSMENT MATRIX

Assignment of Numbers to Rank Risks More Quantitatively

			Mishap Probability				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	1	2	6	8	12
	Critical	II	3	4	7	11	15
	Moderate	III	5	9	10	14	16
	Negligible	IV	13	17	18	19	20

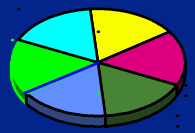
Step 3 - Analyze Risk Control Measures





Process: Comprehensive risk control options are developed for managing each risk.

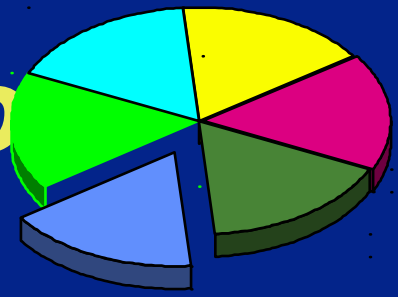
Output: Risk control options to be considered by the decisionmaker.



THE MACRO OPTIONS

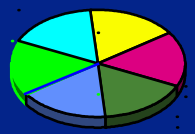
- REJECT
- DELAY
- TRANSFER
- SPREAD
- AVOID
- COMPENSATE
- REDUCE
- ACCEPT

Step 4 - Make Control Decisions



Process: Get risk decisions to the right person, at the right time, with the right support.

Output: Personnel know their decision-making authority, limitations, and take only necessary risks.

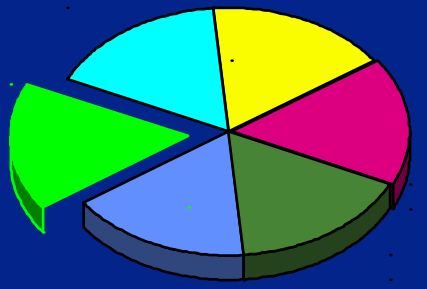


ESTABLISHING A DECISION MAKING GUIDELINE

RISK LEVEL	DECISION LEVEL
Extremely High	Wing Commander or specifically authorized designee
High	Group Commander or specifically authorized designee
Medium	Flight leader, or senior leader on the scene
Low	Any person in a leadership position

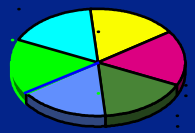
AFPAM 91-215 pg

Step 5 - Risk Control Implementation



Process: Implementation strategies are developed which define Individual Responsibility, Accountability, and Involvement.

Output: Risk Controls tailored for positive mission impact.



THE WELL SUPPORTED RISK CONTROL

A TRAINING PACKAGE

JOB AIDS & TOOLS PACKAGE

A POLICY PILLAR

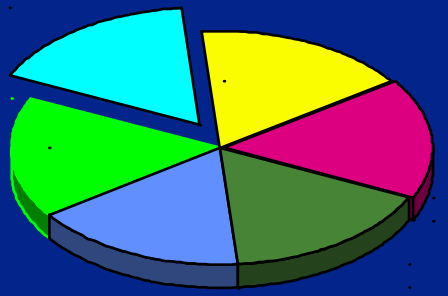
THE WELL SUPPORTED CONTROL

A MEASUREMENT PACKAGE

COMMAND SUPPORT PACKAGE

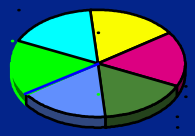
A MOTIVATIONAL PACKAGE

Step 6 - Supervise and Review



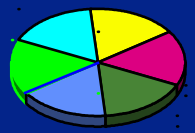
Process: Systematic assessment of mission oriented results.

Output: ORM performance status determined real time. Data available for future applications.



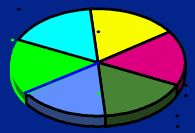
Review and Feedback: Measure & Leverage ORM

- Supervise the Process, not ORM
- Measure Risk Directly
- Use Statistics Accurately
- Improve the effectiveness of feedback



A Real World Assessment: C-5 Ferry Flight

- Workload Transfer from SA-ALC to WR-ALC
- Last 2 Aircraft at SA-ALC
- Functional Check Flight (FCF) Landing Gear Failures
- Jack Pad Failure
- WR-ALC/CC Bias Against “Gear Down” Ferry

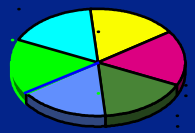


C-5 Ferry Flight: The Process

Team: 339 FLTS Pilots & Aircrew
- WR-ALC / SE & SES
- WR-ALC / LC Engineering
- SA-ALC / LA Engineering

Time: 4 Hours

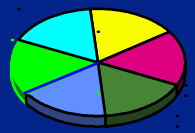
Tools: Change Analysis
- Scenario Tool
- Enhanced Risk Assessment Matrix



C-5 Ferry Flight Analysis Step 1: Hazard ID

FCF "Red X" Items

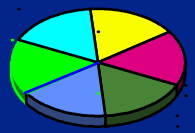
- **Right Fwd Main Gear Retract/Extend Fail**
- **Right Aft Main Gear Retract/Extend Fail**
- **Elevator Hydraulic System 3 Pressure Switch**
- **Pilot's ILS Off-Flag Showing**
- **No. 4 Generator Light On**



Analysis
Step 1: Hazard ID (cont)

FCF Incomplete Items

- Engine Shutdown and Airstart
- Elevator Flight Control Checks
- All Landing Gear Retract/Extend
- Ram Air Turbine Check
- Flight Control Augmentation Reset
- Thrust Reverser Inflight Check
- Stall Warning System Check
- Aerial Delivery System Check



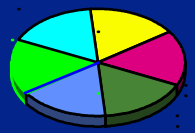
Analysis
Step 1: Hazard ID (cont)

The Scenario Tool

Engine failures on takeoff produce asymmetric thrust. Drag due to extended landing gear leads to crash.

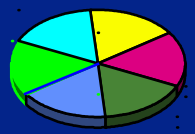
VMC flight requires orbiting til weather dissipates. Low fuel causes divert.

Extended landing gear is damaged by birdstrike enroute.



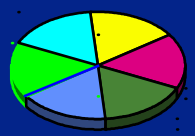
C-5 Ferry Flight Analysis
Step 2: Assess the Risks

Hazard Assessed	RAC	
Crash due Engine Loss/Drag	Cat-Seldom	8
Retract/Extend “Red X” Gear	Crit-Seldom	11
Inflight Thrust Reverser Fails	Crit-Seldom	11
Stall Warning System Fails	Crit-Seldom	11
Ram Air Turbine Fails	Cat-Unlikely	12
Flight Control Aug Reset Fails	Mar-Seldom	14
Birdstrike to Extended Gear	Mar-Seldom	14



C-5 Ferry Flight Analysis Step 3: Analyze Risk Controls

Risk Control		Residual RAC
Pin All Gear Down	*or*	8
Retract/Extend Normally	*or*	11
Leave Gear Down, Pin 2 Only		14
Do Not Use Reverse Thrust Inflight		19
Avoid Stall by Aircrew Vigilance		15



C-5 Ferry Flight Analysis Step 3: Analyze Risk Controls

Risk Control	Residual RAC
Use Ram Air Turbine Emergency Only	15
Do Not Use Flight Control Aug Reset	16
Check Enroute BASH Info, Gear Down	19
Airspeed Limits Damage	

C-5 Ferry Flight Analysis Step 4: Make Control Decisions

WR-ALC/CC Endorsed Ferry Flight with:

- **Only RFMG and RAMG pinned, all gear extended unless emergency develops**
- **All other procedures implemented**
- **CC: Preflight, Weather, Postflight Briefs**

C-5 Ferry Flight Analysis Step 5: Implement Risk Controls

Maintenance will:

- **Repair Applicable “Red X” Items**
- **Pin Suspect Landing Gear**

339 FLTS will:

- **Plan flight using these risk controls**
- **Conduct no FCF tests during ferry**

C-5 Ferry Flight Analysis Step 6: Supervise & Review

339 FLTS

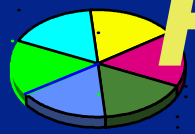
- **Conduct post flight review**
- **Keep CC informed**
- **Forward ‘Lessons Learned’ to WR-ALC Safety Office**

WR-ALC

- **Crosstell ORM application**

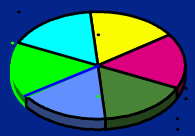
C-5 Ferry Flight: The Results

C-5 Tail # 461 Arrived Safely at WR-ALC on 31 August 1998 Following an Uneventful 2.8 Hour Flight

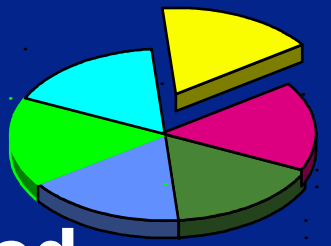


How to Recognize Good Assessments: The Process

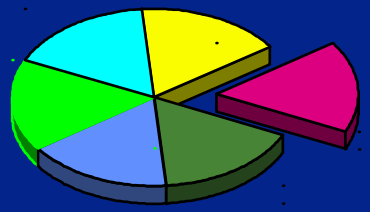
- **Right People** Operators
  Loss Control Community
  Experts
- **Right Time** As Late As Possible, But Just In Time
  Revisited during Ops
- **Right Tools** Reasonable for the level of effort
  Looked for Opportunities



How to Recognize Good Assessments: The Steps



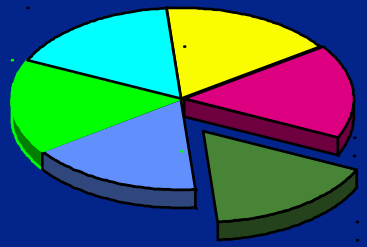
- Step 1
  - Operations Analysis Included
  - More than One Hazard ID Tool Used
  - Lots of Hazards Identified



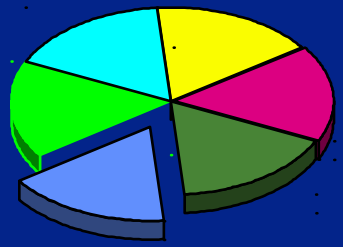
- Step 2
  - Risk Assessment Matrix Used
  - Risks Prioritized from Greatest to Least

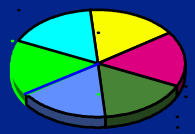
How to Recognize Good Assessments: The Steps

- Step 3
  - Macro Control Options Explored
  - Many Hazard Controls Identified



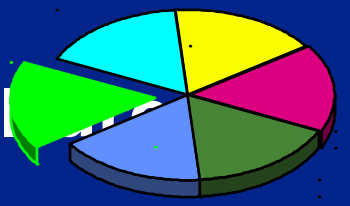
- Step 4
  - Correct Decisionmaker Identified
  - Data to Aid Decisionmaker



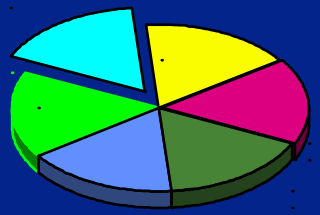


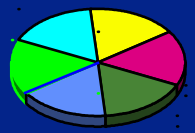
How to Recognize Good Assessments: The Steps

- Step 5
  - Implementation Plan Fits Unit Cu
  - Multiple Support Packages



- Step 6
  - Direct Measures of Risk
  - Feedback Mechanism



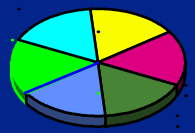


Maximizing The Application

Resource ORM Activities

Objective: Allocate resources to ORM (control-opportunity) at a level it can competitively justify

1. **Invest in ORM - Training, tools, time**
2. **Require basic cost-benefit assessments**
3. **Allow risk control proposals to compete for $$$**

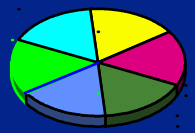


Maximizing The Application

Establish an ORM Management Structure

Objective: Provide the necessary leadership and staff resources to guide the ORM process

1. **Designate a risk control Czar**
2. **Czar integrates ORM across functional lines**



Maximizing The Application

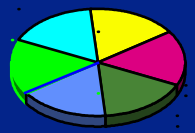
Induce Loss Control Community Functional Integration

Objective: Build increasing cooperation and integration of the loss control community

Organizationally combine Loss Control Functions

or

1. **Designate a risk management Czar**
2. **Create cross-functional management councils**

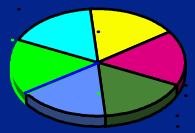


Maximizing The Application

Set Goals & Objectives

Objective: Establish periodic ORM performance and programmatic goals

1. **Select scope of application**
2. **Establish objectives**
3. **Review at mainstream program reviews**

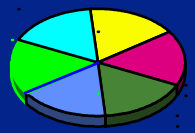


Maximizing The Application

Regularly Monitor ORM Progress

Objective: Periodically assess a set of data that effectively monitors organization ORM status

1. **Establish direct measures of risk**
2. **Review at Staff Meetings, Project Reviews, etc.**

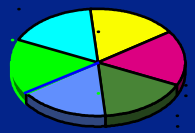


Maximizing The Application

Build an Aggressive Opportunity Mindset in the Organization

Objective: Create an organization as conscious of the opportunity aspects of ORM as it is the risk reduction

1. **Establish that some risk is good**
2. **Look for risk opportunities**
3. **Distinguish between unnecessary and necessary risk**

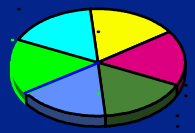


Maximizing The Application

Commit to Breakthrough Improvement

Objective: Put improvement of risk performance on a competitive level with other mission elements

1. **Find possibilities for improvement**
2. **Challenge the Organization to succeed**
3. **Incorporate ORM goals with other goals**

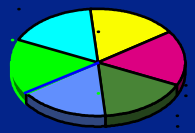


Maximizing The Application

Exploit the ORM Value of Mishap Reviews

Objective: Consistently induce consideration of the ORM implications of mishaps

1. **Assess ORM status at time of mishap**
2. **Incorporate Lessons Learned in current ORM**

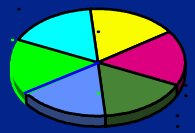


Maximizing The Application

Leaders Set a Personal Example

Objective: To assure credibility of the ORM process through personal behavior

"To understand what is truly important, watch the patterns of behavior to see what the senior leader does…."



Maximizing The Application

Use the Power of Question

Objective: Use pointed ORM questions to induce ORM activity and culture change

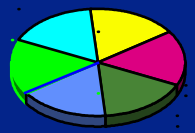
Such as: "What is the Highest Risk?"

"What risk barriers prevent opportunities?"

"What hazard ID tools were used?"

"What data is available from similar units?"

"What risk controls were considered?"

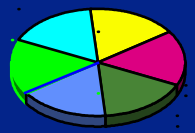


Maximizing The Application

Detect & Correct Gambling

Objective: Develop an organization in which risk "gambling" is deterred even when the gambler "wins"

1. **Determine level of ORM applied**
2. **Reward only if justified by ORM**



Maximizing The Application

Heat Shield Subordinates

Objectives: Protect subordinates who have taken prudent, mission supportive risks, but experienced severe losses, from negative consequences

1. **Provide ORM training**
2. **Hold leaders accountable for:**

Taking unnecessary risks

Not taking needed risks

3. **Protect people if things go bad**

Overseeing The Command: The Annual Summary Report

A. Center Steering Committee Actions & Accomplishments

B. Center Training Efforts

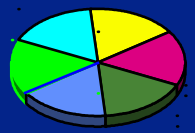
C. Successful Applications

D. Problem Areas

E. Resource Needs

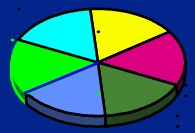
F. Future Plans

G. Miscellaneous



A - ORMSC Actions & Accomplishments

- AFOSH Council Appointed ORMSC
  - WR ALC/CV Chairs
  - ALC and Tenants Represented
- Accepted Responsibility
- Discussed Training Parameters
- Expressed Concerns
- Approved Training Schedule
- Established Future Measurements
- Finalized POCs



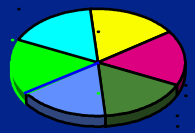
B - Center Training Efforts

- Completed 5 Level 1 Classes
- WR-ALC Status
- Proposed Implementation Training Goals

WR-ALC Status

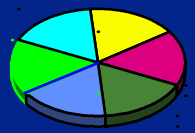
Unit	POC	L-1
EM	✓	3
FM		
LB	✓	3
LC	✓	1
LE	✓	
LF	✓	5
LG	✓	1
LJ	✓	2
LK	✓	3
LN	✓	1

Unit	POC	L-1
LR		
LU	1	
LY	✓	2
PK	✓	
QL	✓	1
SE	✓	16
TI	5	
653CLSS	✓	2
78ABW	✓	13
Other	ALC ✘	4
Tenants	✘	6



Proposed Implementation Training Goals

- **Mar 99** 33% Level 2 Training
  25% Level 3 Training
- **Jun 99** 66% Level 2 Training
  50% Level 3 Training
- **Sep 99** 100% Level 2 Training
  75% Level 3 Training
- **Dec 99** 100% Level 3 Training

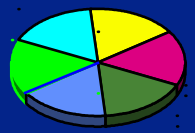


C - Completed Applications

- C-5 Ferry Flight
- C-130 Boron Patch
- KC-10 Fuel Cell Leak Check
- Bldg. 640 Pedestrian Crosswalk
- Steam Plant Chill-water Facility
- Bldg. 137 Heat Stress
- Switching Safety Office PCs

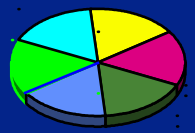
D - Problem Areas

- "Flavor of the Month"
  - Yet Another Program
  - "This Too Shall Pass"
- Ops Tempo Leads to Shortcuts
  - » Procedures
  - » Training
  - » Guidance
  - » Process
- Results Are Not Required
  - "Bean-counting"
  - Leadership "Too busy"



E - Resource Needs

- People
  - Establish Knowledgeable Cadre
  - Leadership Must Be Involved
- Time
  - Allow for Training
  - Allow for Evolution
  - Be Patient With Results
- Money
  - Initial Investment
  - Opportunity Costs
  - Printing



F - Future Plans

- Publicity
- Legitimate Integration
- Completion of Initial Phase
- Adjust Implementation Plan
- Assess Future Training Requirements

Summary


1. Identify the Hazards
2. Assess the Risks
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Risk Control Implementation
6. Supervise and Review

OPERATIONAL RISK MANAGEMENT